COMPLETE LISTING OF ALL OF THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claim 1 (currently amended): A method for a diversified host based route selection metric, the method comprising:

using a diversified route profile table to measure <u>values of a plurality of route information in a routing cache;</u>

<u>wherein a value is based on</u> a breadth of use <u>for a route</u> and <u>a</u> frequency of use for <u>the</u> rout~~es~~, <u>wherein the breadth of use indicates a number of destinations of packets in a sampling period for the route, and wherein the frequency of use indicates a number of packets that were transmitted along the route in the sampling period;</u> ~~in a~~ <u>and</u>

<u>removing, from the routing cache, a route information with a lowest value and subsequently adding a new route information to the</u> routing cache.

Claim 2 (currently amended): The method of claim 1, wherein data collected in the table is used by an analyzer to rank the routes <u>based on the values of the routing information</u>.

Claim 3 (Original): The method of claim 1, wherein the rank of the routes is used by a route selection algorithm to determine which routes in a routing table should be programmed into a network route cache.

Claim 4 (Original): The method of claim 1, wherein the routing cache comprises a network route cache and a host route cache.

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Claim 5 (Original): The method of claim 4, wherein the use of the network routing cache is optimized such that routes that are not used to route to a large number of destinations can be offloaded into the host route cache.

Claim 6 (Original): The method of claim 4, wherein the use of the network routing cache is optimized such that routes that are used to route to a large number of destinations are stored in the network routing cache.

Claim 7 (currently amended): The method of claim 1, further comprising:

using a set of IP addresses that appear in a profile table, over a the sampling period to measure the value of maintaining each route in a route cache.

Claim 8 (Original): The method of claim 7, wherein the route cache is a routing table that only contains a subset of all the routes that are known by the router knows.

Claim 9 (currently amended): The method of claim 1, further comprising:

assigning each route information, in a route cache, a unique identifier that can be inserted into a recorded data for each address that is programmed into the profile table, in order to improve the efficiency of evaluating routes in the routing cache.

Claim 10 (Original): The method of claim 1, further comprising:

using a programmable hash function to generate the hash value hash(Pkt.daIP).

Claim 11 (Original): The method of claim 1, further comprising:
varying a hash function that is used between sampling periods for the same route set in order to improve the quality of the data that is collected.

Claim 12 (Original): The method of claim 1, further comprising:
shortening the time of the sampling period in order to obtain a more complete list of IP addresses that are using a particular set of routes.

Claim 13 (Original): The method of claim 12, wherein if the time of the sampling period is shortened to correspond to the length of time that it takes to transmit a single packet, then a complete list of all IP addresses that are using a particular set of routes can be generated.

Claim 14 (Original): The method of claim 1, further comprising:
adding a counter to each hash entry in a profile table, where the counter will be incremented for each time that a hash entry is written to.

Claim 15 (Original): The method of claim 1, further comprising:
adding a counter for each hash entry in a profile table, where the counter will be incremented every time the hash entry is written with the same IP address and is reset every time the entry is written with a new IP address.

Claim 16 (Original): The method of claim 1, further comprising:
using a list instead of a hash for profiling route breadth and frequency.

Claim 17 (Original): The method of claim 1, further comprising:

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using different inputs to a profiler other than the destination address of packets.

Claim 18 (Original): The method of claim 17, wherein the different inputs are used to measure the breadth and frequency of flows as well as host routes.

Claim 19 (Original): The method of claim 1, further comprising:
identifying routes by use of suitable identifier technique.

Claim 20 (previously withdrawn): A method for evaluating the suitability of routes for use in a routing cache, the method comprising:
using an array indexed by a value, hash(Pkt.daIP), and written to with a packet destination address, Pkt.daIP, to profile the width and breadth of use for routes in a routing table.

Claim 21 (previously withdrawn): The method of claim 20, wherein the hash() value may be any suitable function.

Claim 22 (previously withdrawn): The method of claim 20, further comprising:
using profile control bits to control the profiling of routes for use in the diversified host route selection metric.

Claim 23 (previously withdrawn): A method for a diversified host based route selection metric, the method comprising:
using a route profiler that groups routes into profile sets such that each profile sets standard deviation of value is minimized.

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Claim 24 (currently amended): An apparatus for a diversified host based route selection metric, the apparatus comprising:

a route profiler configured to use a diversified host route metric hash to measure <u>values of a plurality of route information in a routing cache;</u>

<u>wherein a value is based on</u> a breadth of use <u>for a route</u> and <u>a</u> frequency of use for <u>the</u> routes, <u>wherein the breadth of use indicates a number of destinations of packets in a sampling period for the route, and wherein the frequency of use indicates a number of packets that were transmitted along the route in the sampling period;</u> ~~in a~~ <u>and</u>

<u>a route selection algorithm configured to remove, from the routing cache, a route information with a lowest value and subsequently add a new route information to the</u> routing cache.

Claim 25 (currently amended): The apparatus of claim 24, wherein the breadth of use and frequency of use are used by an analyzer to rank the routes <u>based on the values of the route information</u>.

Claim 26 (original): The apparatus of claim 24, wherein the rank of the routes is used by a route selection algorithm to determine which routes in a routing table should be programmed into a network route cache.

Claim 27 (original): The apparatus of claim 24, wherein the routing cache comprises a network route cache and a host route cache.

Claim 28 (Original): The apparatus of claim 24, wherein the use of the network routing cache is optimized such that routes that

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are not used to route to a large number of destinations can be offloaded into the host route cache.

Claim 29 (Original): The apparatus of claim 24, wherein the use of the network routing cache is optimized such that routes that are used to route to a large number of destinations are stored in the network routing cache.

Claim 30 (currently amended): The apparatus of claim 24 wherein the route profiler is configured to use a set of IP addresses that appear in a profile table, over a the sampling period to measure the value of maintaining each route in a route cache.

Claim 31 (Original): The apparatus of claim 30, wherein the route cache is a routing table that only contains a subset of all the routes that are known by the router.

Claim 32 (currently amended): The apparatus of claim 24, wherein the route profiler is configured to assign each route information, in a route cache, a unique identifier that can be inserted into a recorded data for each address that is programmed into a programmable hash function, in order to improve the efficiency of evaluating routes in the routing cache.

Claim 33 (Original): The apparatus of claim 24, wherein the route profiler is configured to use a programmable hash function to generate the hash value hash(Pkt.daIP).

Claim 34 (Original): The apparatus of claim 24, wherein the route profiler is configured to vary a hash function that is

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used between successive sampling periods for the same route set in order to improve the quality of the data that is collected.

Claim 35 (Original): The apparatus of claim 24, wherein the route profiler is configured to shorten the time of the sampling period in order to obtain a more complete list of IP addresses that are using a particular set of routes.

Claim 36 (Original): The apparatus of claim 24, wherein if the time of the sampling period is shortened to correspond to the length of time that it takes to transmit a single packet, then a complete list of all IP addresses that are using a particular set of routes can be generated.

Claim 37 (Original): The apparatus of claim 24, wherein the route profiler further comprises:

a counter to each hash entry in a profile table, where the counter will be incremented for each time that a hash entry is written to.

Claim 38 (Original): The apparatus of claim 24, wherein the route profiler further comprises:

a counter for each hash entry in a profile table, where the counter will be incremented every time the hash entry is written with the same IP address and is reset every time the entry is written with a new IP address.

Claim 39 (Original): The apparatus of claim 24, wherein the route profiler is configured to use a list instead of a hash for profiling route breadth and frequency.

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Claim 40 (Original): The apparatus of claim 24, wherein the route profiler is configured to use different inputs other than the destination address of packets.

Claim 41 (Original): The apparatus of claim 24, wherein the different inputs are used to measure the breadth and frequency of flows as well as host routes.

Claim 42 (Original): The apparatus of claim 24, wherein the route profiler is configured to identify routes by use of suitable identifier technique.

Claim 43 (previously withdrawn): An apparatus for evaluating the suitability of routes for use in a routing cache, apparatus comprising:

a route profiler configured to use an array indexed by a value, hash(Pkt.daIP), and written to with a packet destination address, Pkt.daIP, to profile the width and breadth of use for routes in a routing table.

Claim 44 (previously withdrawn): The apparatus of claim 43, wherein the hash() function may be any suitable function.

Claim 45 (previously withdrawn): The apparatus of claim 43, wherein the route profiler is configured to use profile control bits to control the profiling of routes for use in the diversified host route selection metric.

Claim 46 (previously withdrawn): An apparatus for a diversified host based route selection metric, the apparatus comprising:

a profiler configure to group routes into profile sets such that each profile sets standard deviation of value is minimized.

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Claim 47 (currently amended): An apparatus for a diversified host based route selection metric, the apparatus comprising:

means for using a diversified route profile table to measure values of a plurality of route information in a routing cache;

wherein a value is based on a breadth of use for a route and a frequency of use for the routes, wherein the breadth of use indicates a number of destinations of packets in a sampling period for the route, and wherein the frequency of use indicates a number of packets that were transmitted along the route in the sampling period; in a and

means for removing, from the routing cache, a route information with a lowest value and subsequently adding a new route information to the routing cache.

Claim 48 (currently amended): An article of manufacture, comprising:

a machine-readable medium having stored thereon instructions to:

use a diversified route profile table to measure values of a plurality of route information in a routing cache;

wherein a value is based on a breadth of use for a route and a frequency of use for routes, wherein the breadth of use indicates a number of destinations of packets in a sampling period for the route, and wherein the frequency of use indicates a number of packets that were transmitted along the route in the sampling period; in a and

remove, from the routing cache, a route information with a lowest value and subsequently adding a new route information to the routing cache.

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